

58. A device according to claim 57 wherein said flexible substrate comprises a resin.

59. A device according to claim 57 wherein said base film comprises silicon oxide.

*A<sup>13</sup> and* 60. A device according to claim 57 wherein said thin film transistor comprises a channel formation region comprising a crystalline semiconductor.

61. A device according to claim 57 wherein said flexible substrate comprises polyethylene terephthalate.

62. A device according to claim 57 wherein said semiconductor device is an EL display unit.

63. A device according to claim 57 wherein said semiconductor device is a liquid crystal display unit.

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REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested. The foregoing amendments are responsive to the March 23, 2001 Office Action.

Applicants respectfully request entry of the requested amendments and reconsideration of the application in view of the following comments.

Amendment to the Title

The title has been amended herein to better describe the invention. Applicant respectfully requests entry and approval of the new title.

Response to the Claim Rejections Under 35 U.S.C §§ 102 and 103

Claims 1, 4-7, 10-12, 29, 32-35, and 38-40 are rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent No. 5,317,236 issued to Zavracky, et al. The rejection asserts that Zavracky allegedly teaches each element of the claims. Claims 2, 3, 8, 9, 14-16, 18-28, 30, 31, 36, 37, and 41-56 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zavracky in view of U.S. Patent No. 4,988,976 issued to Lu. The rejection asserts that Zavracky allegedly teaches each element of the claims except for heads-up displays, which is allegedly taught by Lu. Applicants can find no rejection or treatment of Claims 13 or 17. Claims 6, 12, 16, 20, 24, 28, 34, 40, 44, 48, 52 and 56 are cancelled herein.

The present invention is directed toward a display unit having a channel formation region containing hydrogen, carbon, nitrogen, and oxygen atoms at particular densities. Each of the independent claims is amended to recite these densities. None of these densities are taught or suggested by the prior art.

In view of the foregoing distinctions, Applicants respectfully submit that independent Claims 1, 7, 13, 17, 21, 25, 29, 35, 41, 45, 49, and 53 are patentably distinguished over the cited art. Applicants respectfully submit that Claims 1, 7, 13, 17, 21, 25, 29, 35, 41, 45, 49, and 53 are in condition for allowance, and Applicants respectfully request allowance of Claims 1, 7, 13, 17, 21, 25, 29, 35, 41, 45, 49, and 53.

Claims 2-5, 8-11, 14-15, 18-19, 22-23, 26-27, 30-33, 36-39, 42-43, 46-51, and 54-55 depend either directly or indirectly from one of the independent claims. Each dependent claim further defines the independent claim from which it depends. In view of the foregoing remarks regarding Claims 1, 7, 13, 17, 21, 25, 29, 35, 41, 45, 49, and 53, Applicants respectfully submit that Claims 2-5, 8-11, 14-15, 18-19, 22-23, 26-27, 30-33, 36-39, 42-43, 46-51, and 54-55 are likewise in condition for allowance. Applicants respectfully request allowance of dependent Claims 2-5, 8-11, 14-15, 18-19, 22-23, 26-27, 30-33, 36-39, 42-43, 46-51, and 54-55.

Summary

In view of the above amendments and remarks, all of the claims should be in condition for allowance. A formal notice to that effect is respectfully solicited.

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Respectfully submitted,

Date: 6/25/01

  
James T. Hagler  
Reg. No. 40,631

Fish & Richardson P.C.  
PTO Customer No. 20985  
4350 La Jolla Village Drive, Suite 500  
San Diego, CA 92122  
Telephone: (858) 678-5070  
Facsimile: (858) 678-5099

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Version with markings to show changes made

In the specification:

Please change the title of the application to read as follows:

"A DISPLAY UNIT OF A HELMET OR A VEHICLE OR AN AIRPLANE".

In the claims:

Claims 6, 12, 16, 20, 24, 28, 34, 40, 44, 48, 52 and 56 have been cancelled.

Claims 1, 7, 13, 17, 21, 25, 29, 35, 41, 45, 49 and 53 have been amended as follows:

1. (Amended) [An electro-optical] A display unit of a helmet comprising:

a pair of transparent substrates comprising a resin, each of said transparent substrates having a curved surface;  
[and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said helmet with a shield comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said shield, and wherein at least said channel formation region contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

7. (Amended) [An electro-optical] A display unit of a helmet comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said helmet with a shield comprising said [electro-optical modulating] layer and said transparent substrates, wherein information is displayed on said shield, and wherein at least said channel formation region contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

13. (Amended) [An electro-optical] A display unit of a vehicle comprising:

a pair of transparent substrates comprising a resin, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said vehicle with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  
 $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times$   
 $10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a  
density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

17. (Amended) [An electro-optical] A display unit of a vehicle comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said  
transparent substrates and comprising a source region and a  
drain region and a channel formation region and a gate  
electrode, said channel formation region provided between said  
source region and said drain region, said gate electrode

provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said vehicle with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

Wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  
 $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times$   
 $10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a  
density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

21. (Amended) [An electro-optical] A display unit of an airplane comprising:

a pair of transparent substrates comprising a resin, each of said transparent substrates having a curved surface;  
[and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate

electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said airplane with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

25. (Amended) [An electro-optical] A display unit of an airplane comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said airplane with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said front glass, and

wherein at least said channel formation region contains hydrogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

29. (Amended) [An] A helmet comprising:

a pair of transparent substrates comprising a resin, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said helmet with a shield comprising said [electro-optical modulating] layer and said transparent substrates, wherein information is displayed on said shield, and wherein at least said channel formation region contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

35. (Amended) [An] A helmet comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; [and]

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said helmet with a shield comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said shield, and wherein at least said channel formation region contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

41. (Amended) A vehicle comprising:

a pair of transparent substrates comprising a resin,  
each of said transparent substrates having a curved surface;  
[and]

a pixel thin film transistor provided over one of said  
transparent substrates and comprising a source region and a  
drain region and a channel formation region and a gate  
electrode, said channel formation region provided between said  
source region and said drain region, said gate electrode  
provided adjacent to said channel formation region with a gate  
insulating film therebetween; and

[an electro-optical modulating] a layer comprising a  
liquid crystal provided between said transparent substrates to  
provide said vehicle with a front glass comprising said  
[electro-optical modulating] layer and said transparent  
substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1$   
 $\times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a  
density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen  
atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

45. (Amended) A vehicle comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; and

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said vehicle with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1 \times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

49. (Amended) An airplane comprising:

a pair of transparent substrates comprising a resin,  
each of said transparent substrates having a curved surface;  
[and]

a pixel thin film transistor provided over one of said  
transparent substrates and comprising a source region and a  
drain region and a channel formation region and a gate  
electrode, said channel formation region provided between said  
source region and said drain region, said gate electrode  
provided adjacent to said channel formation region with a gate  
insulating film therebetween; and

[an electro-optical modulating] a layer comprising a  
liquid crystal provided between said transparent substrates to  
provide said airplane with a front glass comprising said  
[electro-optical modulating] layer and said transparent  
substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1$   
 $\times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a

density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .

53. (Amended) An airplane comprising:

a pair of transparent substrates comprising a tempered glass, each of said transparent substrates having a curved surface; and

a pixel thin film transistor provided over one of said transparent substrates and comprising a source region and a drain region and a channel formation region and a gate electrode, said channel formation region provided between said source region and said drain region, said gate electrode provided adjacent to said channel formation region with a gate insulating film therebetween; and

[an electro-optical modulating] a layer comprising a liquid crystal provided between said transparent substrates to provide said airplane with a front glass comprising said [electro-optical modulating] layer and said transparent substrates,

wherein information is displayed on said front glass,  
and

wherein at least said channel formation region  
contains hydrogen and halogen atoms at a density of  $1 \times 10^{15}$  to  $1$   
 $\times 10^{20}$  atoms  $\text{cm}^{-3}$ , and contains carbon and nitrogen atoms at a  
density of  $1 \times 10^{16}$  to  $5 \times 10^{18}$  atoms  $\text{cm}^{-3}$ , and contains oxygen  
atoms at a density of  $1 \times 10^{17}$  to  $5 \times 10^{19}$  atoms  $\text{cm}^{-3}$ .